Competency 4.3 **Radiation protection personnel shall demonstrate a working level knowledge of the DOE *Radiological Control Manual* implementation process.**

Competency 4.4 **Radiation protection personnel shall demonstrate a working level knowledge of the implementation process for 10 CFR 835.**

1. Supporting Knowledge and/or Skills

4.3-a. Describe the relationship between the DOE *Radiological Control Manual* (DOE *RadCon Manual)*, the Site Radiological Control Manual, and site implementation plans.

4.3-b. Discuss the role of radiation protection personnel with respect to the oversight of the DOE and contractor Radiological Control Manuals and site implementation plans.

4.4-a. Describe the relationship between 10 CFR 835 and the site radiation protection program.

4.4-b. Discuss the role of Department radiation protection personnel with respect to the oversight of the implementation of 10 CFR 835 and the site radiation protection program.

2. Summary

DOE issued 10 CFR 835, *Occupational Radiation Protection*, as a means to implement the *Radiation Protection Guidance to the Federal Agencies for Occupational Exposure* (52 FR 2822) and codify existing DOE radiation protection directives. The final rule became effective 30 days after its publication on Dec. 14, 1993, in the *Federal Register*. This regulation establishes requirements for radiation protection of occupational workers at DOE facilities with the intent of ensuring that radiation exposures are kept not only within applicable limits, but as far below these limits as is reasonably achievable. Because DOE recognized that initially meeting the requirements of 10 CFR 835 would be difficult, the final rule required the submission of a radiation protection program (RPP) by Jan. 1, 1995, that would "set forth the plans, schedules, and other measures for achieving compliance" with the requirements of this final rule by Jan. 1, 1996. The RPP is designed to describe those actions that will demonstrate full compliance with 10 CFR 835.

However, 10 CFR 835 does not address every essential area needed to form the basis of a comprehensive program to protect individuals from the hazards of ionizing radiation in the workplace. Therefore, DOE issued DOE Notice 441.1 to establish radiological protection requirements that, combined with 10 CFR 835 and its associated implementation guidance, form the basis for a comprehensive RPP.

The DOE *RadCon Manual* offers detailed guidance for implementation of radiation protection in the DOE system. It establishes practices for the conduct of DOE radiological control activities and states DOE's positions and views on the best courses of action currently available in the area of radiological controls. This manual is intended to be reissued in 1996 as a RadCon Technical Standard. The use of "shall" statements presently in the document will presumably be changed to "should" (or equivalent) statements.

The aforementioned documents serve to satisfy DOE's role in ensuring that all aspects of their management and operating (M&O) contractors' RPPs meet and adhere to those requirements essential for protecting workers, the public, and the environment from all activities conducted under their auspices.

The site/contractor radiological control manual has been the site's RPP. It was an extension of the DOE *RadCon Manual*, that contained site specific information as well as alternatives, additions, and supplements, with appropriate detailed clarifications where necessary. However, with the issuance of 10 CFR 835, a site's RPP will now be designed to describe those actions that will demonstrate full compliance with 10 CFR 835.

The site/contractor implementation plan provides details of how each requirement in 10 CFR 835 will be carried out or implemented. It includes explanations of alternatives, additions, and supplements, to situations or information addressed in 10 CFR 835.

3. Self-Study Scenarios/Activities and Solutions

Review

- 10 CFR Part 835, *Occupational Radiation Protection.*
- DOE N 441.1, *Radiological Protection for DOE Activities.*
- DOE/EH-0256T (Revision 1), *Radiological Control Manual.*

Scenario 1

You have been assigned to work with an architect in the design of a new wing of your processing building. Because of a specific design configuration, it may be necessary for a rad worker to enter a radiological controlled area for the purpose of making physical adjustments to the sensors of a number of gauges over the course of a calendar year without such periodic adjustments, calibration of gauges cannot be maintained. Redesign of the system at this point would be cost prohibitive, especially since the process may be discontinued within the next year or so. Such adjustments, would, however, depending upon the time they take, result in additional radiation exposure to workers, of up to 5 rem per visit. How is this situation addressed in 10 CFR 835, and in the DOE *RadCon Manual*, and how would you implement it in respect to your RPP and site implementation plan?

Your Solution:

Scenario 1, Solution
(Any reasonable paraphrase of the following is acceptable.)

The DOE *RadCon Manual* addresses the fact that a worker may receive a dose in excess of 5 rem per year (including all exposure up to the time of a planned special exposure) (as per 10 CFR 835, section 204). Exceptions to this may be granted under extraordinary situation (as per the DOE *RadCon Manual,* Article. 213.3.a.-b.) This situation would qualify as extraordinary since redesign of the system would be theoretically cost prohibitive.

The conditions of a planned special exposure would have to be detailed in both the update to the site RadCon manual and as an additional site implementation plan. These conditions would have to be:

- Reviewed by the radiological control manager.
- Submitted (by the contractor senior site executive) to the secretarial office.
- Approved by both the secretarial officer and the assistant secretary for environment, safety, and health.

In the process of this review, the site would have to:

- Find that no alternative actions were feasible or practical.
- Request an exception to exposure limits (for special planned exposures) in writing.
- Get site and DOE approval from proper officials (see above.)
- Determine prior exposure doses for the affected worker(s) and consider only those workers who, under this special exposure, would not exceed 5 rem in the current year.
- Obtain permission, in writing, from each worker involved.
- Inform each individual of:
  - the purpose of the planned operations
  - the procedures to be followed
  - the potential dosages that could be received
  - other associated potential risks involved
  - the specific radiological conditions anticipated
  - and any other hazards that might be encountered.
- Instruct workers on how to keep exposures As Low As Reasonably Achievable (ALARA).
- Keep accurate records of actual exposure levels received during the operation.
- Submit a written report to the approving organizations identified above at the conclusion of the operation.

Scenario 2

As a member of the radiological protection staff of a contract site you must implement a change in procedures involving the inspection of a very high radiation area for which a planned special exposure will be required. The inspection will involve two facilities, both of which have multiple contractors. How would you go about doing this?

Your Solution:

Scenario 2 Solution
(Any reasonable paraphrase of the following is acceptable.)

- The DOE *RadCon Manual* provides guidance on implementing the provisions of 10 CFR 835.
- Articles in 10 CFR 835 that effect a site operation will be complied with, except where variations are covered (and approved) in the site RadCon manual and site implementation plan.
- Since these two sites, where the alternate procedure is to be implemented, have other contractors also working there, the DOE *RadCon Manual* states that: "A common manual, with facility, contractor, or building-specific guidance to accommodate unique considerations, should be issued and endorsed by each contractor's senior site executive."
- Therefore, this common site manual and implementation plan would have to be amended to reflect the necessary special planned exposure.
- The changes to the site RadCon manual and site implementation plan will then have to be reviewed and approved by all the contractor senior site executives concerned. These changes do not need to be reviewed by DOE officials as long as they do not violate any section of 10 CFR 835, and as long as the exceptions (special planned exposures) are approved by DOE (as discussed below).
- Radiological protection personnel must ensure that management policies, requirements, expectations, and objectives for the site RPP are clearly and unambiguously stated.
- Radiological protection personnel must ensure that:
  - exceptions or alternative approaches to sections of 10 CFR 835 are:
    + revised by the RadCon managers
    + submitted [by the contractor senior site executive(s)] to the secretarial office
    + approved by both the secretarial office and assistant secretary for environment, safety, and health.
- The submittal must contain:
  - a description of the exceptional or alternative approach
  - a technical rational and basis for each
  - suggested wording of the alternative
  - justification that the alternative will achieve equal or improved performance, employing equal or better techniques, solutions, or methods. (In this case, that it is the only feasible [cost effective] way to handle this situation.)
  - they meet all requirements as stated in 10 CFR 835, section 204

4. Suggested Additional Readings and/or Courses

Courses

NOTE: See Appendix B for additional course information

- *Radiological Control Manual Training for Managers* -- Oak Ridge Institute for Science and Education
- DOE/EH-0450 (Revision 0), *Radiological Assessors Training (for Auditors and Inspectors) - Applied Radiological Control*, sponsored by the Office of Defense Programs, DOE
- *Applied Health Physics* -- Oak Ridge Institute for Science and Education
- *Radiation Protection Functional Area Qualification Standard Training* -- GTS Duratek

NOTES: